

 **Journal of the Japan Petroleum Institute**  
The Japan Petroleum Institute

[Available Issues](#) | [Instructions to Authors](#) | [Japanese](#) >> [Publisher Site](#)

Author:  [ADVANCED](#) | Volume  Page   
Keyword:   |



[TOP](#) > [Available Issues](#) > [Table of Contents](#) > Abstract

ONLINE ISSN : 1349-273X

PRINT ISSN : 1346-8804

**Journal of the Japan Petroleum Institute**

Vol. 46 (2003) , No. 5 pp.328-334



[\[PDF \(610K\)\]](#) [\[References\]](#)

## Catalyst Development for Methanol Synthesis Using Parallel Reactors for High-throughput Screening Based on a 96 Well Microplate System

[Kohji OMATA](#)<sup>1)</sup>, [Yuhsuke WATANABE](#)<sup>1)</sup>, [Tetsuo UMEGAKI](#)<sup>1)</sup>, [Masahiko HASHIMOTO](#)<sup>1)</sup> and [Muneyoshi YAMADA](#)<sup>1)</sup>

1) Dept. of Applied Chemistry, Graduate School of Engineering, Tohoku University

(Received: April 14, 2003)

The combinatorial approach is widely used for homogeneous and heterogeneous catalyst development. The main key technologies are “combinatorial chemistry (CC)” for material preparation and “high-throughput screening (HTS)” for rapid assay using automated and/or robotic equipment. A HTS reactor with 96 parallel lines was designed and manufactured to optimize the Cu-Zn catalyst for methanol synthesis. A neural network (NN) was constructed from the “catalyst composition-activity” dataset obtained by the HTS reactor. The catalyst composition was optimized by a genetic algorithm combined with the trained NN. Active Cu-Zn catalysts for methanol synthesis under CO<sub>2</sub> rich syngas were discovered by these combinatorial tools.

**Keywords:** [Combinatorial chemistry](#), [High-throughput screening](#), [Genetic algorithm](#), [Neural network](#), [96 well microplate](#), [Methanol synthesis](#)



[\[PDF \(610K\)\]](#) [\[References\]](#)

Download Meta of Article [\[Help\]](#)

[RIS](#)

[BibTeX](#)

To cite this article:

Kohji OMATA, Yuhsuke WATANABE, Tetsuo UMEGAKI, Masahiko HASHIMOTO and Muneyoshi YAMADA, *Journal of the Japan Petroleum Institute*, Vol. **46**, No. 5, p.328 (2003) .

---

doi:10.1627/jpi.46.328

JOI JST.JSTAGE/jpi/46.328

Copyright (c) 2004 by The Japan Petroleum Institute

---



---

[Japan Science and Technology Information Aggregator, Electronic](#)

